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GEOGRAPHIC INTELLIGENCE REPORT

NORIL'SK



CIA/RR-G-22

July 1958

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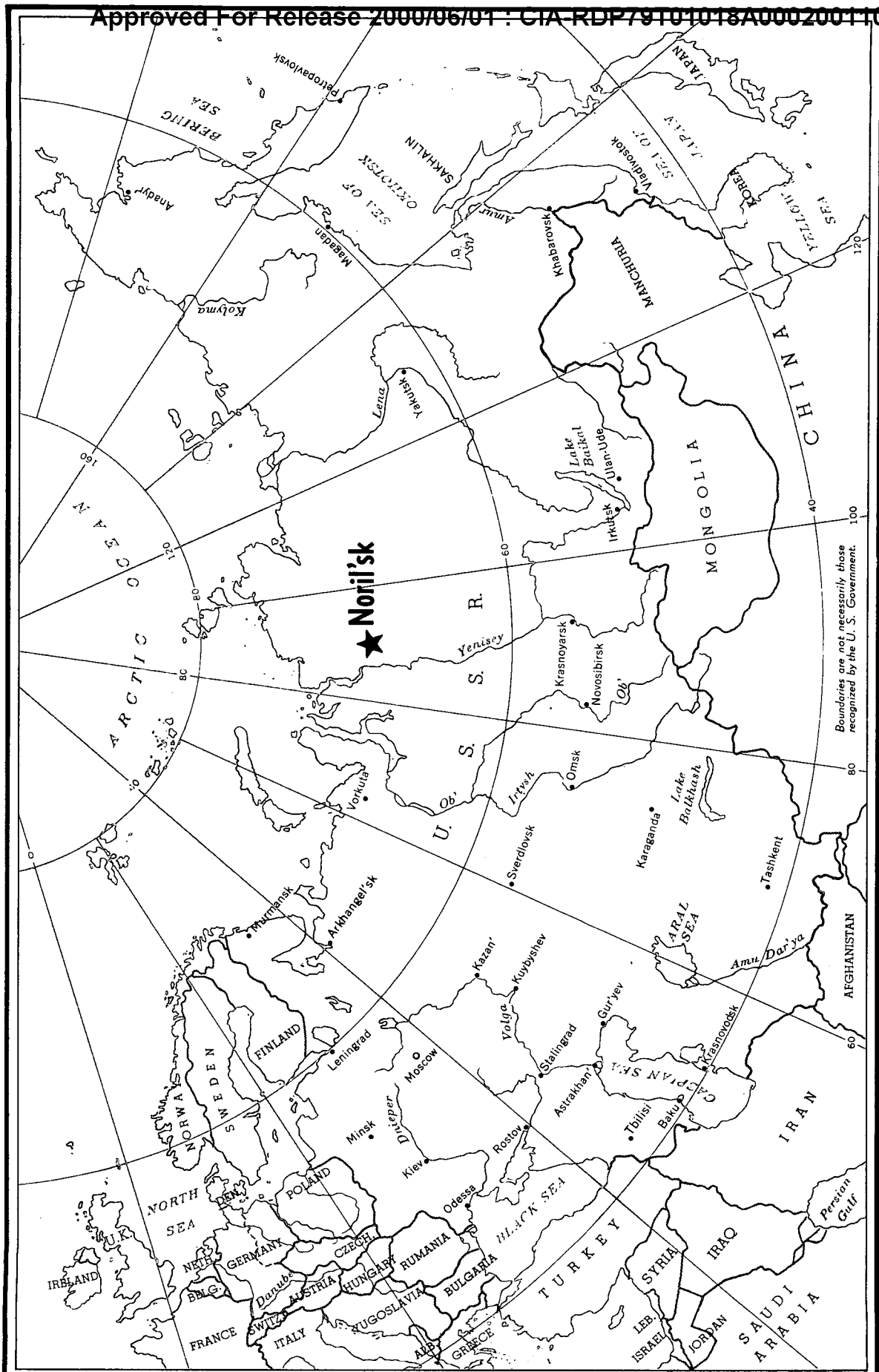
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NORIL'SK*

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Summary and Conclusions

Noril'sk, with an estimated population of 150,000, is the largest mining and metallurgical complex in the Soviet Arctic and currently supplies one-third of the nickel, one-fifth of the cobalt, and more than one-tenth of the copper produced in the USSR.

The total area of Noril'sk is about 30 square miles. Forming the main industrial core of the city are its smelters and refineries, ore-dressing plant, a coke-chemical plant, and thermal-electric powerplants. These are supplemented by a number of byproduct and fabricating enterprises, and repair shops. Vital to the industrial activities is the supply of ore and coal from mines located mainly to the south of the urban concentration. The city has also established housing and public utilities as well as educational, cultural, and recreational facilities resembling those of many large urban centers to the south.

Surface connections between Noril'sk and other parts of the Soviet Union are chiefly by rail to the Yenisey River port of Dudinka, and thence by water via the Yenisey River and the Northern Sea Route. Water transport is limited to a relatively short summer navigation season, but year-round transportation for passengers, mail and freight is available by air.

In addition to fulfilling an important economic role, the facilities currently established in Noril'sk clearly indicate its military potential as a supply base and as a vital telecommunication center for supporting the expanding network of Soviet airfields and radar stations in the west-central Arctic. In view of its northern location and its permanently established assembly, repair, and storage facilities, Noril'sk could conceivably become the operational center for an ICBM launching site.

*The cut-off date for research on this report was May 1958. D/GG has coordinated the information with the appropriate components of ORR and OCI.

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I. Introduction

The recent United States proposal for aerial inspection of the Arctic reemphasized the fact that this region can no longer be dismissed as a barren wasteland of ice and unnavigable seas. The Arctic has become a region of strategic military significance. Along the 10,000-mile perimeter* of the Arctic Basin lie Soviet, United States and Canadian airbases, early-warning radar nets, and possibly Soviet guided-missile launching sites. These installations are integral parts of the defensive-offensive networks on the polar routes between the US and the USSR.

Decades of research and development have enabled the USSR to amass a wealth of physical environmental data in the Arctic that is unmatched by the rest of the world. This information made possible the construction of permanent European-type settlements. The recognition of the strategic importance of the Soviet North and its wealth of natural resources provided the impetus for both the establishment and further growth of settlements, scientific stations, and military installations, notably airfields. Some of the settlements have become centers of growing economic importance and are capable of contributing substantially to the national economy as well as to regional development.

Although earlier economic development was confined primarily to the European Arctic at settlements such as Murmansk, Arkangel'sk, and Vorkuta, the location of sizable mineral deposits in more remote parts of the Soviet Union and the extension of transportation facilities eastward to reach them have stimulated the growth of mining centers in the Siberian North. In many ways the Soviets have revealed their capability for dealing with harsh environmental conditions.

Exploitation of rich polymetallic ores in the lower Yenisey Basin was the basis for the development of the impressive urban industrial complex of Noril'sk. This city is the largest of its kind in the entire Soviet Arctic and may be a prelude to the establishment of similar large centers elsewhere in the Soviet Arctic.

*Actually, 9,940 statute miles at the latitude of the Arctic Circle, 66°33'20"N.

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II. General Characteristics

Noril'sk, located almost 200 miles above the Arctic Circle, is an important mining and metallurgical complex with a population estimated variously to be 92,000 to 150,000. 1,2/ The existence of a major industrial complex in such a remote area reflects the determination of Soviet industry to exploit strategic metals wherever they may be located.

Despite the harsh physical environment and consequent interruption of normal transportation for long periods during the year, the contribution of Noril'sk to the Soviet economy is significant. The city supplies roughly one-third of the total production of nickel and may be the chief producer in the USSR. It also supplies nearly one-fifth of the Soviet cobalt production and 10 to 15 percent of the copper.

Although the presence of polymetallic ores and coal in the Noril'sk area had been known for many decades, significant industrial development did not begin until the railroad between Noril'sk and the Yenisey port of Dudinka was completed in 1937. The construction of a nickel refinery was begun in 1938 and it was partially in operation by 1942. 3/

The demand for critical materials during World War II intensified activity in the Noril'sk area. Plants and mines were in part equipped with machinery evacuated from forward areas. The rate of growth assumed even greater magnitude in the postwar period, when large numbers of PW's were used in the construction of new installations, transportation facilities, and housing.

The phenomenal development of Noril'sk was revealed in 1953, when it was elevated from a workers' settlement to a municipality and designated as a separate election district. A subsequent transition of the basic labor force from forced labor to contract and volunteer workers has contributed to the present character of the city.

In 1954 the Noril'sk metallurgical combine was under the administration of the Ministry of Nonferrous Metallurgy, where it remained until 1957 when the Ministry was abolished during the economic reorganization. Noril'sk industries are now managed by the Krasnoyarskiy Sovnarkhoz with headquarters in the city of Krasnoyarsk.

Noril'sk is under the political-administrative jurisdiction of Taymyrskiy (Dolgano-Nenetskiy) Natsional'nyy Okrug in Krasnoyarskiy Kray. The city is situated at the extreme northwestern tip of the Central Siberian Plateau about 310 miles (500 kilometers) south of

the Arctic coast and 50 miles (80 kilometers) east of the Yenisey River (see Map 26765). Noril'sk is located on the left slope of the Noril'sk River Valley, extending nearly 8 miles north to south and some 5 miles east to west. It is surrounded by monotonous tundra. The northwest-southeast glaciated river valley is generally about 12 to 15 miles (20 to 25 kilometers) wide. The nearest point of the Noril'sk River itself is located about 6 miles (10 kilometers) northeast of the city; and about 10 miles (16 kilometers) to the north it flows into the sizable Ozero Pyasino (Lake Pyasino). From here the Pyasina River flows northward to the Arctic Ocean (see Map 26487).

Flanking Noril'sk on the south are relatively low plateau-like mountains (Noril'skiye Gory) that rise rather sharply above the city. Shmidt Gora (Shmidt Mountain), a truncated cone that forms a northern spur of these mountains is a prominent feature of the Noril'sk landscape. From the foothills of the plateau, the urban area of Noril'sk has gradually expanded northward despite the marshy character of the river plain. Along its northern periphery recent construction has included sizable industrial and residential developments. The plateau, which blocks urban expansion southward, is the focus of mining in the area.

Having attained its present level of development, Noril'sk will undoubtedly continue to be a major source of strategic metals and will increase in size and industrial importance as the demand for critical materials grows. The expansion of activities throughout the Soviet Arctic is increasing the importance of Noril'sk. Extensive efforts to provide ultimately a year-round rail connection between Noril'sk and the Soviet network has been a primary target of Soviet planners since World War II. The completion of such a transportation link would add significantly to the economic development as well as the military potential of Noril'sk.

The complete absence of a comparable urban center in the Siberian Arctic places a premium on Noril'sk as a potential support area for Arctic military activity. Housing, machine and repair shops, storage facilities, a power supply, and existing transportation facilities that are established there could be readily diverted to military use. With the expansion of Arctic airfields and of the early-warning radar net, Noril'sk will become increasingly important as a supply base and telecommunication center.

III. Industry

A. Processing and Associated Activities

Mining and nonferrous metallurgy, the principal industries of Noril'sk, are the basis for its very existence. More than 20 individual plants form a closely integrated combine engaged primarily in processing copper, nickel, cobalt, and platinum. Secondary activities are centered on associated byproducts, namely coke-chemicals, sulphuric and hydrochloric acids, and construction materials. A separate but very significant enterprise is a heavy-water installation. Machine repair shops and two thermal electric powerplants add to the industrial importance of Noril'sk, since services and power form a vital category of activity. The flow of raw materials through the various enterprises is facilitated by a relatively dense network of rail spurs, pipelines, and conveyors that link the numerous mines, ore plants, and refineries.

The major concentration of plant facilities is centered around the Noril'sk nickel combine in the southeastern part of the city. Included among these facilities are the metallurgical works for smelting and refining nickel, an adjacent engineering plant, a sulphuric acid plant, a coke-chemical plant, and several ore-dressing buildings (Figure 1). A number of administrative, research, and storage buildings are also located in the immediate vicinity. The industrial area is served by rail spurs and the east-west Zavod'skaya Ulitsa (street) that together provide access to the individual plants.

The most important plants of the nickel combine are the blast furnaces for smelting nickel and the electrolytic refinery (Figure 2). The production of refined nickel in 1957 is estimated to have been 18,000 tons.* 4/ Nickel concentrates arrive at the combine via a slurry pipeline from a large ore-dressing installation to the west. The engineering plant, located immediately to the north of the electrolytic nickel refinery, is believed to include two foundries, a steel-frame assembly plant, and a number of associated repair shops. The plant is reportedly responsible for producing forgings and castings for all types of enterprises.

The coke-chemical plant includes about 12 buildings. 5/ In 1955, the plant produced approximately 192,000 tons of coke. 6/ In addition to coke, the plant produces coke gas, ammonia sulphate, and tar. Synthetic gasoline is reportedly manufactured here, too, and the plant capacity is estimated to be 600 to 1,000 tons annually. 7/

*All production figures in this report are given in metric tons.

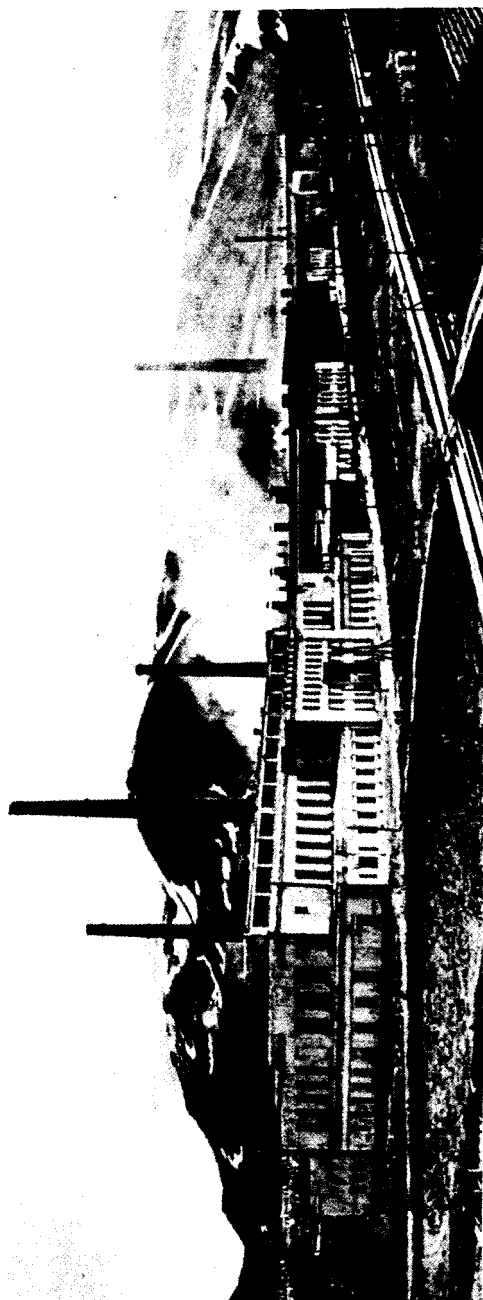


Figure 1. Two general views in Noril'sk. The upper photo, looking toward the southeast, shows the central industrial area. The building in the foreground is believed to contain the locomotive repair shops. The lower photo shows construction in the Gorstroy residential area north of the city.



Figure 2. The electrolytic plant
of the Noril'sk nickel works.

The nearby sulphuric acid plant, which has an estimated annual capacity of about 10,000 tons 8/, utilizes by-product sulphur from the smelters and refineries. A short distance northeast of the coke-chemical plant and on the same road and rail line is a cobalt plant. This plant, like the coke-chemical installation, was reportedly completed during the Fourth Five-Year Plan. 9/ It includes a smelter with 3 electric furnaces, a refinery, 2 cooling towers and a number of other ancillary facilities. 10/ Since cobalt is produced largely as a by-product of nickel refining, the operation of the cobalt plant is closely linked with the nickel smelter and refinery. In 1957 production of refined

cobalt is estimated to have been 270 tons. 11/ Production may reach 375 to 450 tons by 1960, if the planned increase of 50 percent is achieved.

A second sizable industrial development in the area contains the copper and platinum plants and is located on the outskirts of Noril'sk some 6 miles (10 kilometers) to the north-northwest. These metallurgical enterprises represent a more recent addition to the expanding industrial complex. The copper plant, known as "Med'stroy", may have been started during World War II, but most of the construction was undertaken during the Fourth Five-Year Plan. Preliminary operations began in the early 1950's, but large-scale production was not achieved until 1956. The copper-processing facilities are believed to be as modern as those of the Free World. In 1957 the estimated annual production of refined copper was about 50,000 tons. 12,13/ Selenium, found in combination with sulphur in the copper, is probably a by-product. Its export in powdered form has been noted in Soviet press releases.

The platinum refinery, built during the early 1950's, is believed to be doing the final separation and refining of platinum and platinum metals, including palladium, osmium, and irridium. The local chemical industry is probably supported in part by this plant since platinum is used as a catalyst in the production of sulphuric acid.

The copper and platinum plants are served by the Noril'sk-Dudinka broad-gauge rail line. A number of rail sidings and multistory station house are located adjacent to the copper plant. A road leads from Noril'sk via Gorstroy to the industrial site. Workers from two nearby labor camps are probably employed in these plants. South of the plants and railroad is a large disposal area to accommodate industrial wastes.

Noril'sk has a chemical plant producing heavy water that is believed to be supporting the Soviet atomic-energy program. It is located along the northeastern limits of the city near the thermal electric power station (TETS II). The plant has been identified as one including 6 buildings and 2 steel towers 14/, which are reportedly under strict security control.

The major ore-dressing plant feeding the copper and nickel smelters of Noril'sk is located in the southern part of the city at the base of Rudnaya Mountain. This plant, served by rail and road, is the largest of its type in the Noril'sk area. It includes 1 two-story ore-washing building and 2 single-story ore-crusher buildings. 15/ Ore treatment includes crushing, grinding, and selective flotation to produce nickel and copper concentrates. Pipelines carry the concentrates to the smelters. Modifications

S-E-C-R-E-T

of the concentration plant, including the installations of hydrocyclonic units for the selective flotation of ores, were scheduled for completion in 1957. A Soviet source estimated that these changes would increase the plant's total output by 15 percent, and the amount of nickel extracted by 4 to 5 percent. 16/

The heavy local demand for both industrial and housing construction has placed a relatively high priority on the establishment of building-materials plants, including prefabrication enterprises (Figure 3).



Figure 3. Prefabricated construction methods are used to speed the housing program in Noril'sk. Hammerhead cranes that ride on rails alongside the buildings erect the pre-assembled components -- precast-concrete floor framing (1 and 2), brick wall panels 20-inches thick (3 and 4), and windows (5).

The sources of raw materials are the nearby limestone, siltstone, and sandstone deposits. Two quarries have been identified in the area (see Map 24754). In 1957, a reinforced concrete products plant with a scheduled capacity of 35,000 cubic meters of precast, reinforced concrete members and 45,000 cubic meters of industrial concrete began operation. 17/ A shop producing fibrolite panels for housing partitions also began operations recently. Its scheduled production is 100,000 square meters of paneling annually. 18/ Gypsum products for building purposes are also manufactured in local plants. A brick plant and a small cement plant are located along the eastern periphery of the city.

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B. Mining

The future growth of Noril'sk is dependent largely upon nearby mining activity. Polymetallic ores from mines along the ridge of Rudnaya Mountain and in the adjacent valleys of Ugol'nyy Ruchey and Medvezhiy Ruchey to the west and to the east, respectively, supply copper, nickel, cobalt, and platinum to the numerous processing industries. Gold, silver, selenium, and tellurium are also recovered but in much smaller quantities. Most of the Rudnaya Mountain deposits are near the surface and are mined by open-pit methods (Figure 4). Along the Ugol'nyy Ruchey the ores are mined on a series of levels served by rail spurs.

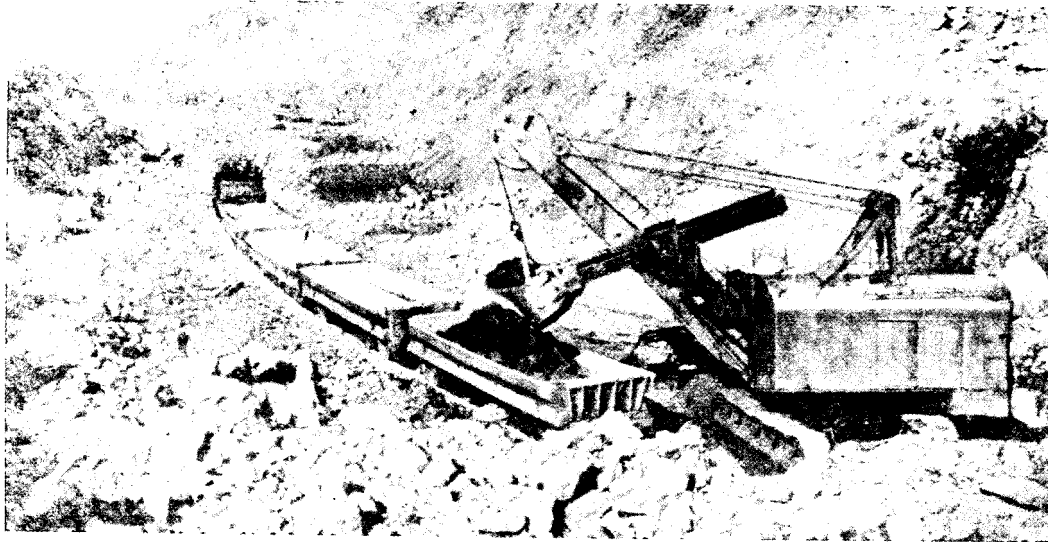


Figure 4. Loading hopper cars by power shovels from open-pit ore mines.

In volume of production, copper is the chief metal obtained from the ores. The copper content of the ore has been estimated to be from 0.47 to 0.60 percent. A current estimate of copper reserves is not available, but it is presumed that they are quite large. Before World War II, they were estimated to be about 720,000 tons. ^{19/} Nickel ranks second with reserves estimated at 200,000 tons. Noril'sk ores contain from 0.3 percent to 0.9 percent nickel. ^{20/} Cobalt is produced primarily as a byproduct of nickel refining. The cobalt content of nickel ores from the Noril'sk mines is extremely high in comparison with that of ores from other major Soviet deposits. In 1955, the estimated cobalt reserve of Noril'sk was 13,500 metric tons in comparison with a total reserve of 42,000 tons for the entire USSR. ^{21/} In view of an increasing cobalt production at Noril'sk, it is possible that a rich cobalt concentrate, independent of the nickel ores, is currently mined in the area.

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Platinum reserves in the area are unknown, but they are undoubtedly favorable in view of recent refinery developments. Contained within the platinum ores are iridium, osmium, ruthenium, and palladium, of which the last is found in extremely high proportions. Additional ore deposits at Chenogorskiy, Kayerkon, and other sites near Noril'sk, including Noril'sk II, are also reported under development. 22/* Although iron ore has been discovered in the region, the deposits have not been fully surveyed. 23/ Unreliable references to uranium and vanadium mining have appeared in former-PW reports.

Coal, the basic industrial fuel of Noril'sk, is mined chiefly on the slopes of Shmidt Mountain by both open pit and drift methods. In 1955, the estimated bituminous coal production in the Noril'sk area was in the magnitude of 2 to 2.5 million tons. This included coal extracted at the workers' settlements of Kayerkon and Kalargon on the Noril'sk-Dudinka railroad approximately 15 miles (25 kilometers) to the west. In addition to that consumed locally, considerable quantities of coal are transported by rail to Dudinka and then transloaded onto river and ocean-going vessels for export.

Although the actual coal reserves of the Noril'sk area are not known, production indicates that they are large. The Soviets report that rich reserves of high-quality coking coal with an ash content of 2 to 10 percent have been discovered at Imangda**, some tens of kilometers from Noril'sk. These deposits are not being developed, but it has been stated that the reserves could supply the Noril'sk metallurgical industry for many years. 24/

IV. Utilities and Telecommunications

The city and industrial environs of Noril'sk are equipped with an electric power supply, a water-supply system, and local and long-distance telecommunication facilities. Soviet news releases have also reported a sewage system and plans for a television station.

Electric power is generated by two local powerplants. Both plants are very important since local mining and metallurgical operations depend chiefly on electric power. Plants are connected by a relatively dense grid, and transformer stations are located at most of the industrial sites. The power installations also act as central heating plants that supply hot water and steam to industrial plants and residential developments. With low temperatures prevailing throughout most of the year, the heating requirements of the buildings alone are extremely high. Average temperatures for 6 months of the year (November through April) are below 0°F, and temperatures of -60°F are not uncommon. Lighting requirements are also unusually high during the long polar night (Figure 5).

*The deposits are not specifically located in the sources.

**Imangda is not shown on Soviet maps.

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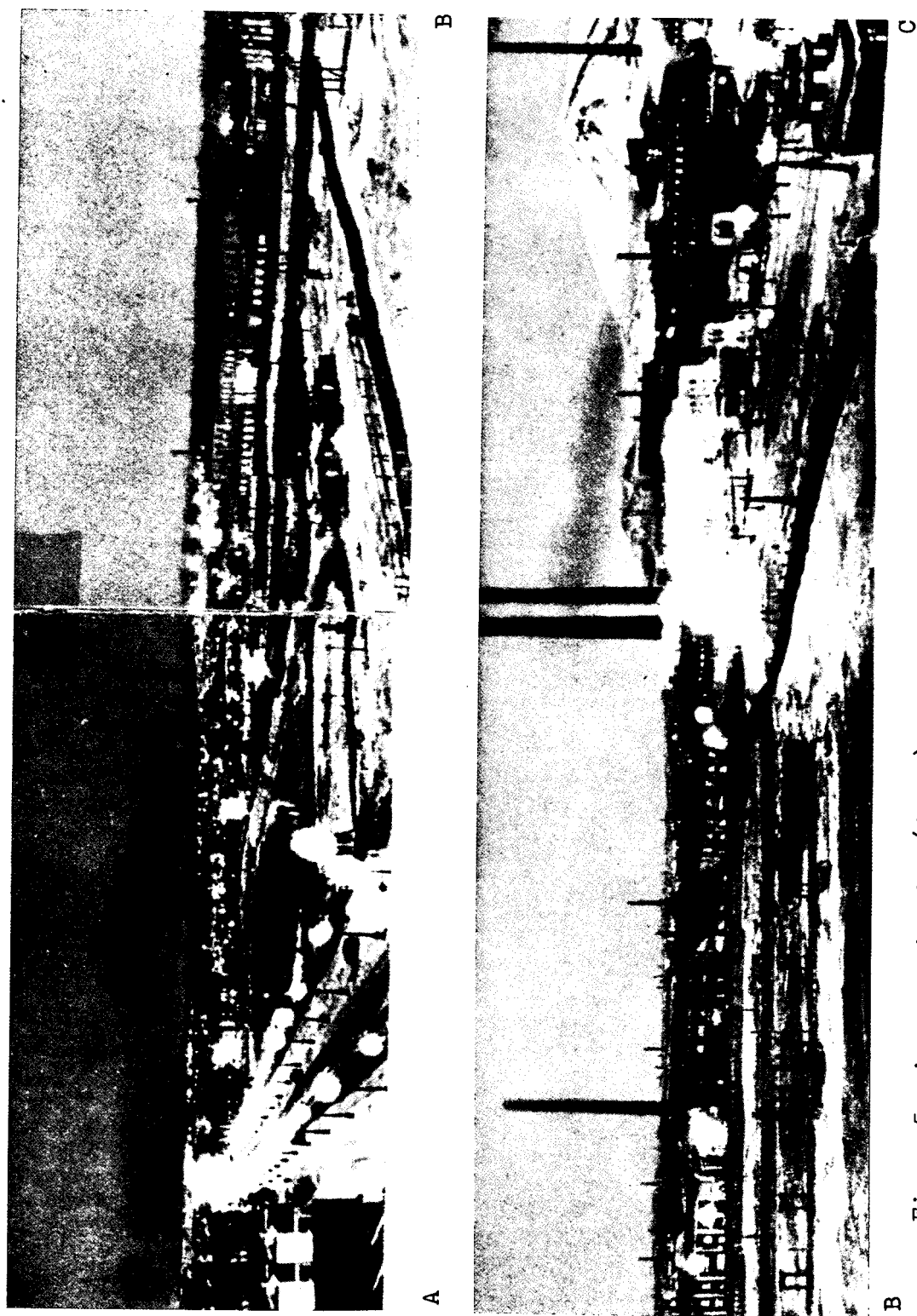


Figure 5. A panoramic view (AB-BC) of Noril'sk taken during the long polar night.

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The largest thermal electric powerplant (TETS II) is an 8-story installation located on slightly elevated land near the northeastern limits of the city (Figure 6). The estimated capacity of this plant is 305,000 kilowatts. ^{25/} The installation has been built since World War II and is equipped with boilers and turbines, a transformer yard, coal-pulverizing and -storage facilities, coal conveyors, and a pumping station.

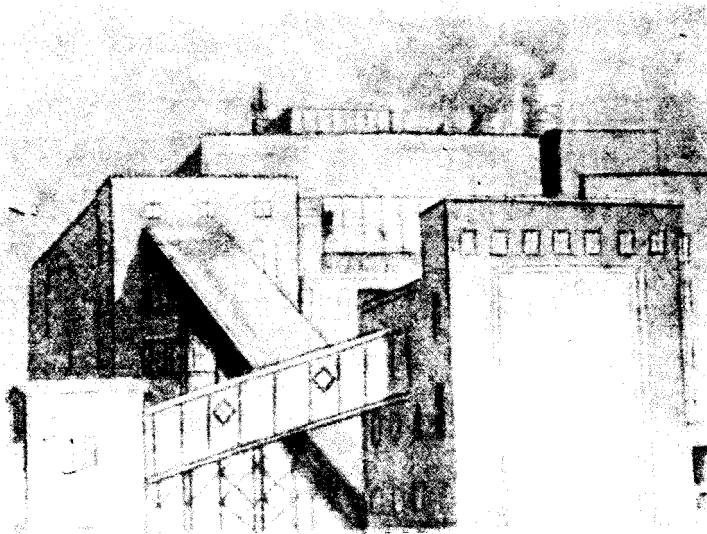


Figure 6. The 8-story thermal electric powerplant (TETS II) of Noril'sk.

A second thermal electric powerplant (TETS I), located at the edge of the city on the northwest, has an estimated capacity of only 10,000 kilowatts, and supplies heat and power chiefly to the older section of Noril'sk. ^{26/} Water for this plant is believed to be obtained from a small lake immediately to the north. In addition to regular sources of supply, several of the larger industrial installations are probably equipped with emergency diesel generating power units. The Sixth Five-Year Plan calls for the construction of a new TETS at Noril'sk. ^{27/} According to a Soviet news release, construction of thermal electric power facilities with an output of 150,000 kilowatts would be necessary if the proposal to convert from the present blast smelting to electric smelting of nickel concentrates were adopted ^{28/}, but there is no evidence that such a project has been undertaken.

The pumping station at TETS II is the chief distribution center for the municipal water supply. Water for both domestic and industrial use is supplied via a wooden pipeline from the Noril'sk River. The pipe is about 1-1/2 meters in diameter and parallels a road that runs northeastward to the river, a distance of approximately 6 miles (10

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kilometers). 29/ According to the Soviets, water never freezes in the pipe despite extremely low temperatures. Pumping stations are probably located at intervals along the line. Water is presumably pumped to what appears to be a regulating reservoir west of the main power station. A pumping station, located on this reservoir, supplies water to the power station, which directs it to the city. Apparently, industrial water consumption is high, since the Soviet press states that Noril'sk consumes as much water as Kiev, a city that has a population about 10 times as large. 30/

Although a water purification plant is associated with the pumping station, there is little information regarding its operation. Many living quarters, especially in the older section of the city, are probably still without adequate plumbing. In the newer residential area of Gorstroy, however, water and sewage lines as well as other urban amenities reportedly are installed, but there is no evidence of a sewage disposal plant. The Soviets have apparently surmounted the problem of permafrost and low temperatures since many of the water, steam, and sewage lines are said to be underground.

Post and telecommunications facilities within Noril'sk include a local telephone system, point-to-point radio facilities, post and telegraph offices, and a wire-diffusion network.* A telegraph center, stated to be the largest in the north, is also planned for Noril'sk. 31/ The telephone system is believed to consist of both automatic and manual exchanges. Telephone service is limited primarily to government offices, industrial installations, and mining enterprises. In addition to point-to-point radio facilities, a wireline parallels the railroad between Noril'sk and Dudinka. From here the line is believed to extend southward to Krasnoyarsk.

V. Residential Development

Noril'sk is an impressive city. Despite its relative newness and Arctic location, it has many characteristics of older and more established cities. Since World War II the Soviets have undertaken an extensive housing-construction program to keep pace with industrial expansion. Approximately 15 million rubles were spent for public improvements in Noril'sk and more than 129,000 square meters of new housing were added during the Fifth Five-Year Plan (1951-1955). 32/ More than 500,000 square meters of housing were scheduled for completion during the Sixth Five-Year Plan (1956-1960). 33/ The most recent example of residential expansion in the area is the Gorstroy development north of Yuzhnaya Ulitsa in the northern part of the city.

*A system that distributes broadcast programs by a wire or cable medium to wired loudspeakers.

The apparently high priority given this project reflects not only a shortage of housing, but also an attempt to improve living accommodations in order to attract contract workers to this remote Arctic outpost.

The Gorstroy development consists of many permanent multistory stone and brick apartment buildings constructed along broad paved streets that form a rectangular pattern (Figure 7). Eight to ten such blocks of housing have been built, and construction is reportedly continuing (Figure 8). Street lighting and sidewalks have been added, giving Noril'sk the appearance of a modern city. According to the Soviets, apartments are equipped with electricity, steam heat, hot and cold running water, and sewage facilities. Government officials and special personnel are said to occupy the larger apartments. Although predominantly residential, a number of government offices, schools, theaters, and shops have been built within Gorstroy. Five of the fourteen schools in Noril'sk and a mining and metallurgical tekhnikum* are reportedly located in the new section of the city. The mining and metallurgical tekhnikum is said to be the largest in the Soviet Union. Several parks and monuments have also been included as cultural attractions. The inevitable communist-hero statue, in this case one of Lenin, at the intersection of Ordzhonikidze and Yuzhnaya Streets marks the entrance to Gorstroy (Figure 9).

In contrast to Gorstroy, housing in the older section of Noril'sk (as reported by PW's) consists mainly of wooden barrack-type buildings and single- and two-story houses. The main concentration of such buildings is in the western part of the city. Several large housing developments, however, are located near individual industrial plants.

Except in the recently planned area of Gorstroy, streets within Noril'sk are not laid out in any regularly defined pattern. One of the main north-south streets is Oktyabr'skaya Ulitsa, which serves as the major link between the large residential area of Gorstroy and the industrial concentrations to the south. Where this street enters Gorstroy, however, its name changes to Ordzhonikidze Ulitsa (Figure 10). The main streets are paved, but former PW's who worked in the area report that because of the harsh climate frequent street and road repairs are necessary.

A number of cultural and recreational facilities have also been built or are under construction or planned for Noril'sk -- most of them along Oktyabr'skaya Ulitsa near the center of Noril'sk and in the new Gorstroy section. A stadium to seat 15,000 spectators is to be built in the center of Noril'sk, presumably on the large

*A tekhnikum is a type of vocational school that prepares technicians for all branches of the national economy.



Figure 7. One of the broad, paved streets with sidewalks, characteristic of the newer Gorstroy section of Noril'sk.

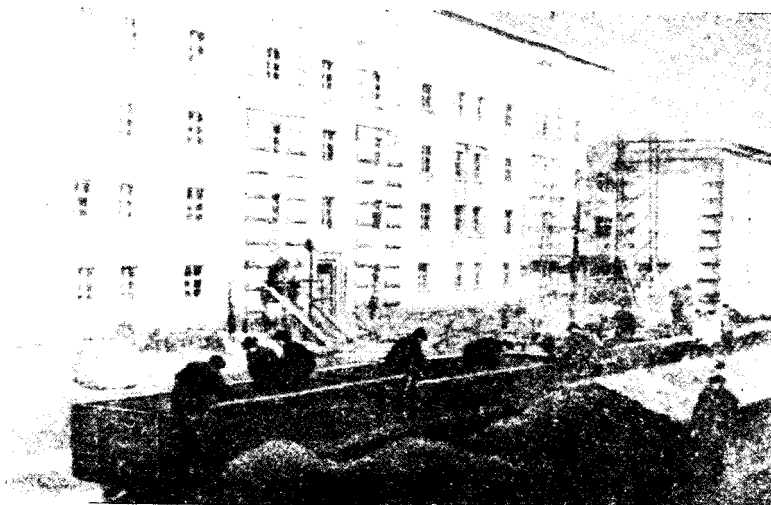


Figure 8. A 100-unit apartment building under construction along Sevastopol'skaya Ulitsa.



Figure 9. Entrance to the predominantly residential area of Gorstroy, looking north along Ordzhonikidze Ulitsa. The statue is a tribute to Lenin.

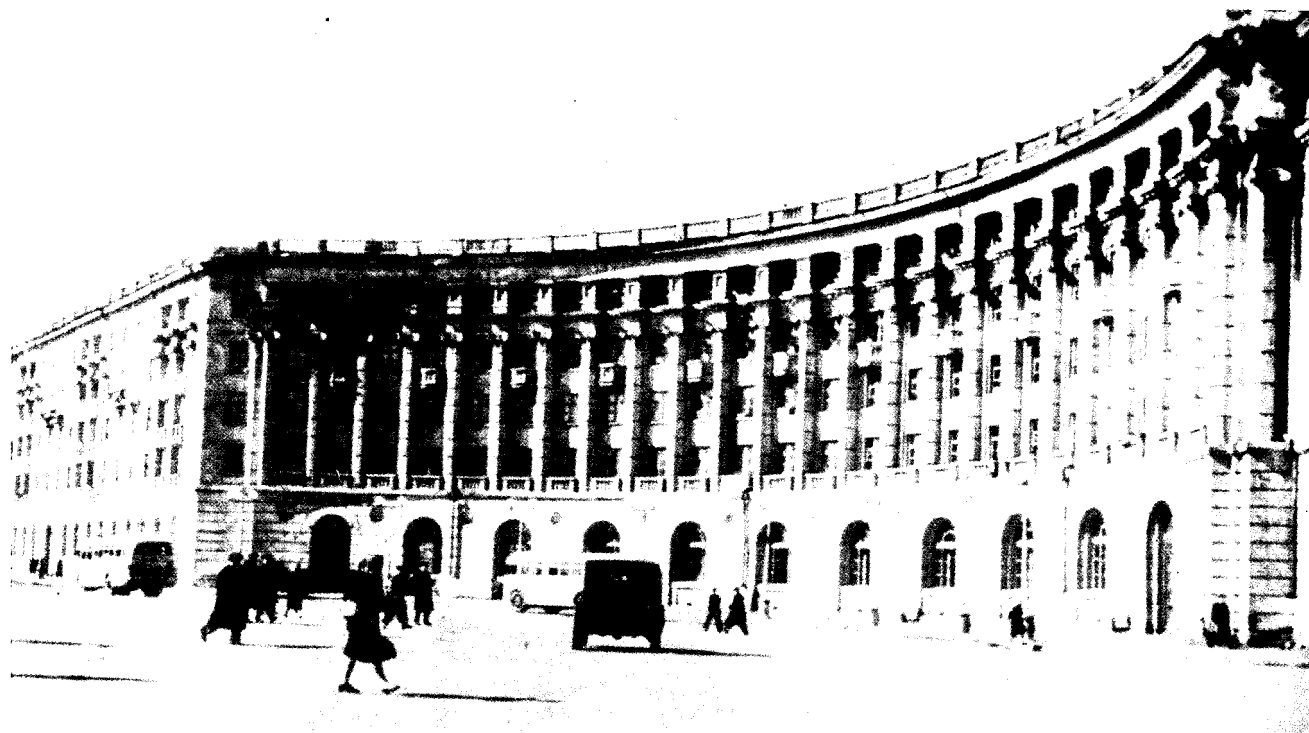


Figure 10. One of the multistory stone buildings facing on Gvardeyskaya Ploshad' (Guards Square) at the intersection of Ordzhonikidze and Monchegorsk Streets.

playground site (Figure 11). 34/ In the block immediately to the north is a gymnasium. In 1956, a natatorium and a new music school building were under construction; and plans include a palace of culture with a theatre, an auditorium, a gymnasium and several other facilities. 35/ A hospital built in 1954 is scheduled for enlargement during the Sixth Five-Year Plan.

During the development of Noril'sk, numerous forced labor camps were established in the area. Since the special amnesties of 1953 and 1955 released large numbers of forced laborers in the Soviet Union, the Noril'sk camps may no longer house forced laborers. Because of the rapid growth in population and the shortage of housing, however, many of the camp buildings are used for other workers.

Despite the apparent size of Noril'sk, commercial activity within the city is surprisingly slight. The shortage or, in some cases, the complete absence of shops for consumer needs was recently criticized in the Soviet press. The limited number of commercial establishments can be explained by the primary emphasis on industrial developments and also by the former predominantly forced-labor population that had little or no purchasing power. The current influx of free workers into Noril'sk, however, appears to have stimulated new trade outlets to meet the increasing demands for consumer goods and services.

In a recent PW report, some 18 state stores and restaurants were identified in the Noril'sk urban area. 36/ Apparently, they are located mainly along Oktyabr'skaya and Ordzhonikidze Streets. A sovkhos on the northeastern edge of the city produces some dairy products, and fresh vegetables that are grown mainly in hot houses (Figure 12). Most of the foodstuffs, however, as well as consumer goods are shipped by water to Dudinka and thence by rail to Noril'sk. The activities of the state farm are believed to be largely experimental, and are somewhat limited by the severe climate and high costs of production. Recently the Agricultural Research Institute of the Far North was moved from Leningrad to Noril'sk. 37/ The scientific work of this institute is directed chiefly toward the development of agriculture, reindeer breeding, and domestic stock breeding in the polar areas. Much of the work is carried out in a network of experimental stations that extend from Murmansk to the Chukotsk Peninsula.



Figure 11. The athletic field in Noril'sk and, in the background, part of the nickel combine.

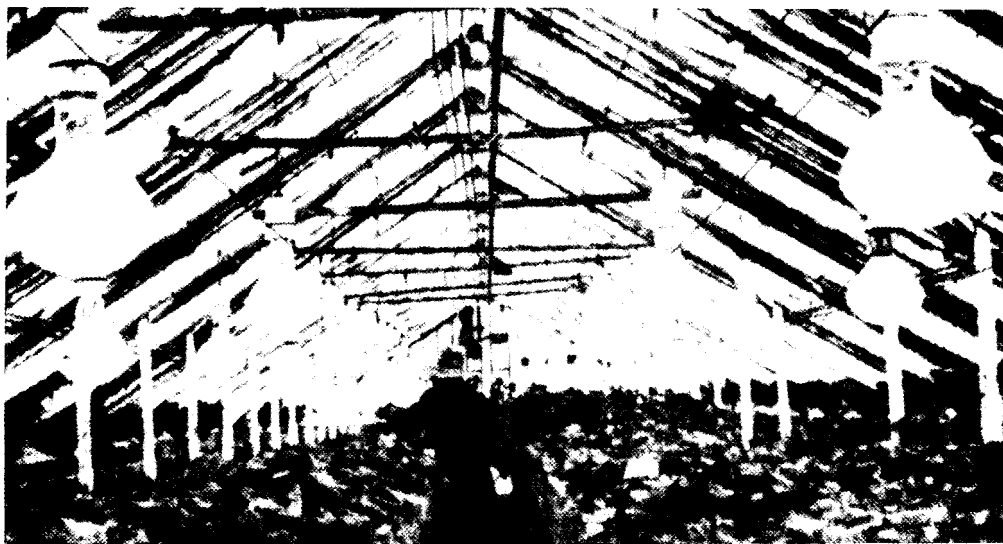


Figure 12. Gardening within one of the hothouses of the Noril'sk sovkhos. Most of the research carried on here by the Agricultural Research Institute is experimental. In growing onions, cucumbers and tomatoes, daylight lamps are used to lengthen the short days.

VI. Intraurban Transportation

The major transportation facilities within Noril'sk are its rail lines, which are primarily for industrial use. The entire area is covered by a relatively dense rail net consisting of plant and mine spurs. These lines, supplemented by a system of conveyors, pipelines, and roads, provide for a constant flow of raw materials and supplies between the various mining and industrial installations.

Rail lines are both broad- and narrow-gauge. In some cases, according to recent reports, a combination of three rails permits the operation of both broad- and narrow-gauge cars on a single railroad. ^{38,39/} It is possible that some of the longer narrow-gauge tracks will eventually be replaced by broad-gauge to conform with the recently constructed Noril'sk-Dudinka line. Many sections of the existing network are electrified, and plans that call for the complete electrification of the Noril'sk-Dudinka system by 1960 ^{40/} presumably will include the rail lines within the Noril'sk industrial region as well.

A number of railroad yards and repair facilities are located in the area and include a sizable locomotive and car repair shop near the center of Noril'sk. Several rail yards and service facilities have been reported along the outskirts of the city, particularly in the mining section where the density of trackage appears to be the greatest.



Figure 13. Taxi stand in Gvardeyskaya Ploshad'
(Guards Square) in the Gorstroy sector of
Noril'sk.

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In addition to industrial transport facilities, electric street-cars, buses, and taxis operate within the city (Figure 13). Their operating schedules and routes are not known. A special shop employing 50 persons operates the street-clearing services ⁴¹/₁, and during the winter, which lasts for nearly 9 months (mid-September to mid-June), snow plows keep the streets open for continual operation of buses and taxis. Other protective measures against the heavy snow include specially designed barriers and fences strung along the streets, roads, and railroad lines and around the mines and plants to prevent drifting. Despite these combined efforts, severe wind storms with blowing snow frequently have a paralyzing effect on transportation as well as industrial activity.

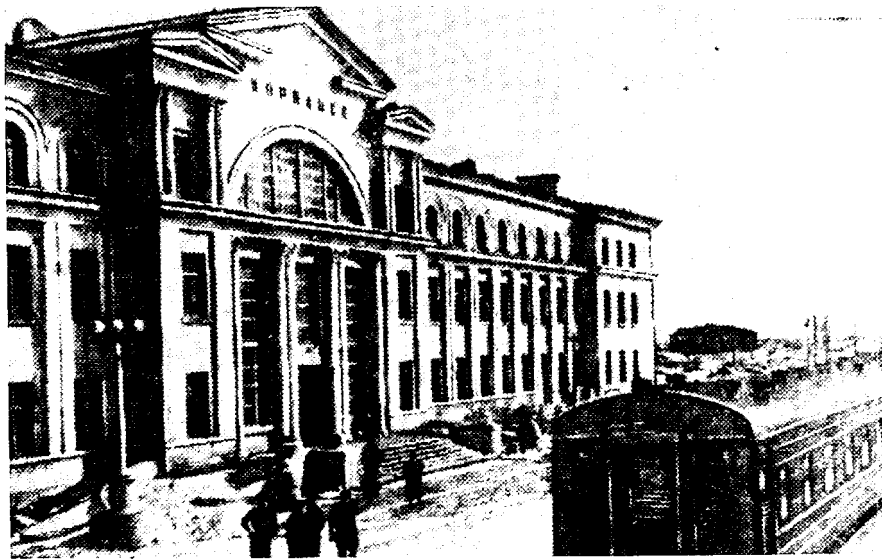


Figure 14. The passenger station at the Noril'sk railway terminal. Trucks and buses supplement railroad transportation within the urban area.

VII. Regional Transportation

A. Rail Facilities

Rail is the most important means of transportation linking Noril'sk with other parts of the USSR (Figure 14). The narrow- and broad-gauge lines of the Noril'sk-Dudinka system connect Noril'sk with the Yenisey River port and thus with the Yenisey waterway and the Northern Sea Route. Because of the relatively short ice-free season, transportation by water is limited to 3 or 4 months; consequently, rail traffic is heaviest during this brief period; but storage facilities in both cities, including warehouses and oil tanks, permit some movement of freight throughout the year.

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The completion of the broad-gauge line in 1952 42/ has greatly facilitated the movement of critically essential machinery, petroleum, lumber, and foodstuffs to Noril'sk. The Soviets claim that more than a half million tons of freight a year is shipped in by water to Dudinka and thence by rail to Noril'sk. Westbound freight from Noril'sk to Dudinka consists mostly of refined metals. Although Soviet press releases imply that the broad-gauge line has replaced the narrow-gauge, evidence indicates that both lines between Noril'sk and Dudinka are still in operation. According to a Soviet Gudok report, the sections of the broad-gauge line between Noril'sk and the coal-mining settlement of Kayerkan, approximately 15 miles (25 kilometers) to the west, are to be electrified in 1958 and, by 1960, the entire Noril'sk-Dudinka line. 43/

The only other rail link with Noril'sk is a 7-mile (12-kilometer) narrow-gauge line leading northeastward to the small port and fishing settlement of Valek on the Noril'sk River. Although this line was constructed to haul supplies for the initial development of Noril'sk, it quickly lost its importance with the increasing utilization of the Noril'sk-Dudinka rail line, which was completed in May 1937. 44/ The short ice-free period and limited channel clearance of the Noril'sk and Pyasina Rivers, which provided access to the Arctic Ocean, have also restricted the use of this water route.

The construction of railroads in the Noril'sk area is a part of the overall Arctic railroad expansion program. Two lines -- the Salekhard-Igarka railroad and a projected line from Achinsk, on the Trans-Siberian Railroad, down the Yenisey River Valley -- could provide the year-round transport necessary to exploit fully the vast mineral resources of the Noril'sk area. Reports indicate that the 600-mile (965-kilometer) Salekhard-Igarka railroad was probably completed in 1954 and that an extension to Noril'sk has been planned. Current information, however, indicates that the completed line is operational only for some 150 miles (240 kilometers) eastward from Salekhard. 45/ At present a 160-mile (258-kilometer) rail line is under construction from Achinsk to Abalakovo. According to plans, this line will cross the Yenisey River via a dam at Maklakovo and continue on down the Yenisey Valley, through the Tunguska coal basin, presumably to Noril'sk. 46/

B. Air Transport

Noril'sk is served the year round by regularly scheduled air flights operating under the Chief Directorate of the Grazhdanskogo Vozdushnogo Flota (GVF). According to 1954-55 Aeroflot winter timetables, a daily flight operates along the Yenisey River between Noril'sk and Krasnoyarsk, with scheduled stops at Yeniseysk and Podkammenaya Tunguska. 47/ In 1956, summer flights were initiated

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between Moscow and Noril'sk via Vorkuta, Pechora, and Syktyvkar, with a single flight daily in each direction. 48/ According to 1957 flight schedules, this summer route operates under the jurisdiction of the Severnoye Territorial'noye Upravleniye (Northern Territorial Directorate) of the GVF. 49/

In addition to Aeroflot passenger and mail service, there is considerable air freight traffic. Strategic and precious metals, including gold, platinum, and cobalt are reportedly transported by air from Noril'sk to various Soviet industrial centers.

Present air facilities consist of a jointly operated civilian and military airfield, known as Nadezhda, located approximately 6 miles (10 kilometers) west of Noril'sk. Facilities include a 3,900-foot runway that is probably asphalt-surfaced, air to ground radio, searchlights, several operational buildings, and a considerable number of storage facilities, including 4 POL tanks. 50/

Transportation between Noril'sk and the airfield is by the narrow-gauge Noril'sk-Dudinka rail line that passes south of the airfield or by a road that roughly parallels the railroad. A branch rail line, originating in the mining area south of Schmidt Mountain, also intersects the Noril'sk-Dudinka line at a railroad station near the airfield. From the station, a short spur line connects storage facilities near the airstrip.

In addition to the Nadezhda airfield, another airfield has been reported in the area but no information is available concerning its location or facilities. Although former PW's reportedly observed military aircraft in the area, there is no evidence that such aircraft are based in the vicinity of Noril'sk.

A landing site for seaplanes is reported on the Noril'sk River near Valek. 51/ Little air activity has been observed, however, and the transportation value of the landing site is believed to be limited by the short ice-free season of the river and the poor transportation facilities between Noril'sk and the landing site. It is possible that in winter planes may use the river as a frozen airstrip. 52/

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APPENDIX A

GAPS IN INTELLIGENCE

Although an increasing number of references to Noril'sk are appearing in the Soviet press, detailed urban information is generally lacking. In most cases, PW reports that include sketches of the industrial area are conflicting and out of date. Soviet statistics on the mineral reserves and industrial production are also meager and only limited information is available on actual plant operation and production. Since the alignment of streets, railroads, and pipelines is only partially known, the city plan (Map 24754) included in this report does not depict all of these facilities in detail. Most of the information on railroads of the region, including information on alignment, operational status, and various stages of construction and electrification, is also limited and often conflicting.

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APPENDIX B

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SOURCE REFERENCES

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Material for the report was derived primarily from classified intelligence sources. These were supplemented by Soviet press releases, [REDACTED] FDD summaries, and Treasure Island translations. Estimates of mineral reserves and metallurgical production were taken from the latest economic and air intelligence reports. Transportation information was derived largely from [REDACTED] PW reports together with recent Soviet press releases. The Soviet press provided most of the data about the planned expansion of the building materials industry and the existing and planned cultural developments within the city. [REDACTED]

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[REDACTED] The information derived from these two sources was supplemented by data from PW reports that contained sketches of the industrial complex.

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Although numerous sources were exploited in preparing this report, the following bibliography is a selective list of the more important sources.

Evaluations following the classification entry have the following significance:

<u>Source of Information</u>	<u>Information</u>
A - Completely reliable	1 - Confirmed by other sources
B - Usually reliable	2 - Probably true
C - Fairly reliable	3 - Possibly true
D - Not usually reliable	4 - Doubtful
E - Not reliable	5 - Probably false
F - Cannot be judged	6 - Cannot be judged

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the authors of this report. No "RR" evaluation is given when the author agrees with the evaluation of the cited document.

S-E-C-R-E-T

S-E-C-R-E-T

1. USSR. Narodnoye Khozyaystvo RSFSR, Statisticheskiy Sbornik (National Economy of the RSFSR: Statistical Handbook), Gosyudarstvennoye Statisticheskoye Izdatel'stvo, Moskva, 1957, p. 49. U.
2. [REDACTED] STATSPEC
3. CIA. CIA/RR 88, 28 Jan 57, The Ferrous Metallurgical Industry of the USSR, p. 83, S.
4. CIA. RR Project No. 30.1864, 1 May 58, Estimated Production of Specified Industries in the Sino-Soviet Bloc, 1957, S.
5. [REDACTED] 25X1A
6. USSR. Promyshlennost' SSSR, Statisticheskiy Sbornik (Industry of USSR: Statistical Handbook), Gosyudarstvennoye Statisticheskoye Izdatel'stvo, Moskva, 1957, p. 117, U.
7. [REDACTED] 25X1A
8. Ibid.
9. [REDACTED] 25X1C
10. Air. op. cit., p. 2, (7, above)
11. CIA. op. cit., (4, above)
12. Army. Doc 38240, 26 Sep 55, Large Ore Dressing Plant in Noril'sk and Warehouses in Kaerakan, info 1950 to early 1955, S/NOFORN/SPECIAL HANDLING.
13. Army. R-72-57, 15 May 57, Medney Zavod in Noril'sk, info 1948 to 5 Mar 54, CIA 2048588, C/NOFORN. Eval F-3.
14. Air. op. cit., (5 and 7, above)
15. Ibid.
16. State. "What is Holding Up Increased Nickel Production in Noril'sk," Selections from the Soviet Press, 21 Aug 57, Issue 84, p. 11-18, (tr of article by M. Yermolenko, and N. Seliverstov, in Promyshlennno-ekonomicheskaya Gazeta, 30 Jun 57) U.

S-E-C-R-E-T

S-E-C-R-E-T

17. Stroitel'naya Gazeta, 3 Feb 56, U.
18. Ibid.
19. Shimkin, Demitri B., Minerals: A Key to Soviet Power, Cambridge, Mass., 1953, p. 120, U.
20. CIA. CIA/RR 88-S-1, 18 Mar 57, The Ferrous Metallurgy Industry of the USSR (Supplement), p. 57, S.
21. Ibid. p. 60.
22. State, op. cit., p. 11. (16, above)
23. Air. IR-14641-56, 15 Oct 56, Area Between Yenisey and Lena Rivers, (tr of Trud, Moskva, USSR, 3 Aug 56) C.
24. State. op. cit., p. 17. (16, above)
25. Air. op. cit., p. 5. (7, above)
26. Ibid.
27. Stroitel'naya Gazeta, 1 May 57, U.
28. State. op. cit., p. 16. (16, above)
29. Izvestiya, 25 Aug 56, p. 2. U.
30. Ibid.
31. Stroitel'naya Gazeta, op. cit., (27, above)

25X1A

32.

[REDACTED]

STATSPEC

33. Stroitel'naya Gazeta, op. cit., (27, above)

34.

[REDACTED]

25X1A

35. Ibid.

36.

[REDACTED]

STATSPEC

37.

[REDACTED]

S-E-C-R-E-T

S-E-C-R-E-T

38. Army. R-77-57, 22 May 57, Industrial Complex, Noril'sk, USSR, info 1948 to 5 Mar 54, p. 3, CIA 2049158, S. Eval RR 2.
39. Army. R-78-57, 22 May 57, Information on the Town of Noril'sk, USSR, info 1948 to 5 Mar 54, p. 8, CIA 2049159, S. Eval RR 2.
40. Gudok, 9 Jun 57, p. 1, U.
41. CIA. FDD, Summary 1457, Activities in the Arctic and Antarctic, 6 Sep 57, p. 8, OFF USE.
42. Gudok, op. cit., (40, above)
43. Ibid.
44. Gudok, op. cit., (40, above)
- 25X1C 45. [REDACTED]
46. Gudok, 31 Oct 56, p. 2, U.
47. USSR. Raspisaniye Dvizheniya Samoletov: Na Zima 1954-1955 (Timetable of Air Traffic: Winter 1954-1955), Glavnoye Upravleniye Grazhdanskogo Vozdushnogo Flota pri Sovete Ministrov SSSR (Aeroflot), Moscow, 1954, 110 p., U.
48. Air. Treasure Island 175139, 6 Nov 56, U.
49. USSR. Raspisaniye Dvizheniya Samoletov: No. 1 leto 1957, (Timetable of Air Traffic: Summer 1957), Glavnoye Upravleniye Grazhdanskogo Vozdushnogo Flota pri Sovete Ministrov SSSR (Aeroflot), 63 p., U.
50. Air. op. cit., (5, above)
- 25X1A 51. [REDACTED]
52. Ryabchikov, Yevgeniy. Severnoye Siyaniye, (Northern Lights), Izdatel'stvo Glavsevmorputi, 1946, p. 33, 109, U.

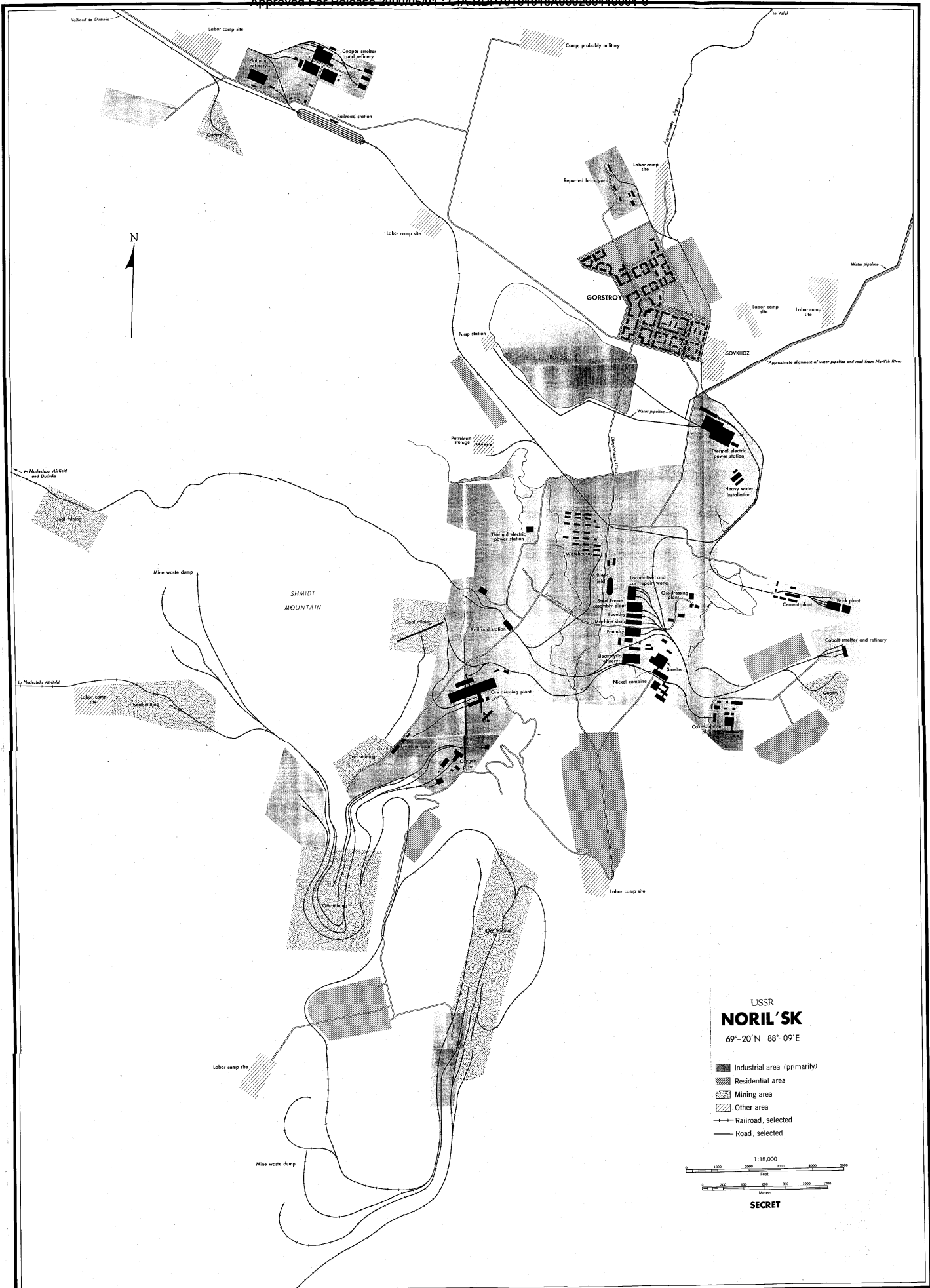
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